

## **REMARKS**

### **Election/Restriction Requirement**

Applicant confirms the following election in response to the Examiner's election requirement:

Applicant elects Group I and Claims 1-13, and 23-34 drawn to a method of calibration of a spacecraft gyro system.

Applicant elects Species "a" for "onboard flight software only" as controlling means for prosecution on the merits if no generic claim is held allowable. Claims 1-7, 9-13 and 23-34 are generic to the elected invention. The election is made without traverse.

Applicant elects Species "d" for "onboard sensors" of attitude determinates for prosecution on the merits if no generic claim is held allowable. Claims 1-7, 9-13 and 23-34 are generic to the elected invention. The election is made without traverse.

Applicant elects Species "k" for "combinations" of reorientation mechanisms for prosecution on the merits if no generic claim is held allowable. Claims 1-13 and 23-34 are generic to the elected invention. The election is made without traverse.

Applicant elects Species "l" for "threshold of yaw transient errors only" in determining a gain scheduling signal for prosecution on the merits if no generic claim is held allowable. Claims 1-13, 23-25, and 28-34 are generic to the elected invention. The election is made without traverse.

Applicant elects Species "p" for "disabling one or more gyro calibration procedures only" in gain scheduling for attitude estimation for prosecution on the merits if no generic claim is held allowable. Claims 1-13 and 23-30 are generic to the elected invention. The election is made without traverse.

In conjunction with election of Species "p" above, Applicant also elects Species "s" for "yaw only" as the direction of disablement for prosecution on the merits if no generic claim is held allowable. Claims 1-13 and 23-30 are generic to the elected invention. The election is made

without traverse.

### **Claim Rejections Under 35 USC Section 112**

Claims 1-7, 9-13, 23-25, and 28-30 were objected to by the Examiner as being indefinite. The Claims are amended herein to address the Examiner's objections as to indefiniteness by deleting the indefinite terminology of "in response to" and more clearly specifying the novel method steps carried out in the invention.

### **Claim Rejections Under 35 USC Section 102**

Claims 1, 2, 6, 7, 9, and 10 were rejected under 35 U.S.C. 102(b) as being anticipated by the Patouraux U.S. Patent 6,804,986, and Claims 1-7, 9-13, 23-25, and 28-30 were rejected under 35 U.S.C. 102(e) as being anticipated by the Horton U.S. Patent 6,853,947. The rejections on prior art are respectfully traversed, particularly insofar as the amended Claims, as now corrected for indefiniteness, more clearly define the invention subject matter as distinct from the cited prior art. As the novel gyro calibration method is now defined in amended main Claim 1, a yaw attitude residual is determined from a first yaw attitude measured by attitude sensors and a second yaw attitude estimated by gyro compassing. The roll gyro bias residual can then be determined using said yaw attitude residual during gyro compassing, thereby minimizing yaw attitude error during gyro compassing. Claim 2 recites further that determining the yaw attitude residual uses the difference between the measured first yaw attitude and the estimated second yaw attitude (as shown in Equation 11). The other main Claims 13 and 23 recite similar terminology. The remaining claims depend from the main claims and are deemed patentably distinct for the same reasons.

Neither the Patouraux nor the Horton patents disclose or suggest the gyro calibration method defined in main Claims 1, 13, and 23, and the subsidiary features defined in the depending Claims. As noted by the Examiner, Pastouraux does not provide a sensor for measuring the yaw angle, and therefore cannot carry out the gyro calibration step as recited in the claims. Horton teaches sensing the attitude of an accelerating object by measuring acceleration with accelerometers in 3-axis

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measurements, and measuring angular rate with angular rate sensors to compute attitude, and a corrective rate signal is determined from acceleration as a reference for a Kalman filter. The Horton teaching thus is entirely different from determining a yaw attitude residual from a first yaw attitude measured by attitude sensors and a second yaw attitude estimated by gyro compassing.

The claim amendments are fully supported in the Specification as filed, particularly at Page 7, Paragraph 0023-0024 and 0037. No new matter is deemed to have been added. Clarification of the invention subject matter to correct indefiniteness is submitted for purposes of advancing prosecution, and is not deemed to be a surrender of any previously recited or equivalent invention subject matter.

In summary, Claims 1-7, 9-13, 23-25, and 28-30 are deemed to be in condition for allowance, and issuance of a Notice of Allowance upon reconsideration is requested.